

TECHNICAL MEMORANDUM

STUDY OF THE
SALT LAKE BOULEVARD ALIGNMENT

Honolulu Area Rapid Transit System
Environmental Impact Statement & Refine Engineering Phase



TECHNICAL MEMORANDUM

STUDY OF THE
SALT LAKE BOULEVARD ALIGNMENT

Honolulu Area Rapid Transit System
Environmental Impact Statement & Refine Engineering Phase

Preparation of this report was financially aided
from a grant from the United States Department
of Transportation under Section 3, of the Urban
Mass Transportation Act of 1964 as amended.

Prepared for

Department of Transportation Services
City & County of Honolulu

by

Daniel, Mann, Johnson, & Mendenhall

March 1978

TABLE OF CONTENTS

- A. INTRODUCTION
- B. DESCRIPTION OF THE AREA
- C. ROUTE PLANNING STUDY
- D. EVALUATION OF SERVICE & PATRONAGE
- E. COMPARATIVE COST ESTIMATE
- F. SUMMARY OF COMPARATIVE EVALUATION

A. INTRODUCTION

The Salt Lake area has recently emerged into a high density apartment complex which together with Aliamanu and Foster Village forms a major residential area in urban Honolulu. To the south of this area are federal lands used primarily for military housing. This entire area bounded by Kamehameha Highway, Moanalua Road, Puuloa Road and Nimitz Highway contains a sizable concentration of Oahu's population.

With the proposed rapid transit system planned to ultimately extend beyond Aloha Stadium to Pearl City, there are two basic route alternatives through this area. One basic route would serve the Honolulu International Airport (HIA) and the other route would serve Salt Lake and its residential environs. The airport route emphasizes service to major employment and activity centers while the Salt Lake route would emphasize service to population concentrations.

The early PEEP I planning study was based on planning goals and objectives^{1/} which cited major employment and activity centers such as the HIA and the Pearl Harbor-Hickam complex to be directly served by transit. Furthermore, during this early planning period, both the State and City had great interest in exploring the potential of providing a special air passenger transfer service between the Airport and Waikiki.^{2/} These

studies were conducted to determine if the proposed fixed guideway system would be capable of providing this special service.^{3/}

With the rapid development of the Salt Lake apartment complex combined with a relatively limited accessibility to the area, the potential of serving this area with rapid transit service is analyzed.

B. DESCRIPTION OF THE AREA

The study area is bounded by Kamehameha Highway, Moanalua Road, Puuloa Road, and Nimitz Highway and comprises Foster Village, Aliamanu, and Salt Lake, all lying north of Salt Lake Boulevard, and the military housing areas lying south of Salt Lake Boulevard. The residential areas are characterized as generally low-density except for the Salt Lake apartment complex. The existing population for the study area is estimated to be approximately 30,000. Currently, it is estimated that there are approximately 3,600 dwelling units in the Salt Lake apartment complex, concentrated in an area of 67 acres giving a density of nearly 54 dwelling units per acre.

The major arterial serving the area is Salt Lake Boulevard. On the eastern end, the only access is via Puuloa Road and to the south is Salt Lake Boulevard and Valkenburgh Street to Kam/Nimitz Highway. Salt Lake Boulevard is currently being improved to a divided 4-lane arterial which will connect to Puuloa Road.

Currently the City provides bus transit service to the area consisting of 2 routes. Bus route #12 operates between the Ala Moana Shopping Center, via the CBD, and to the Salt Lake/Aliamanu area. Bus route #13 operates between Tripler Army Medical Center and Foster Village, via Kalihi (at Umi Loop), Mapunapuna, Salt Lake and Aliamanu.

C. ROUTE PLANNING STUDY

The long-range rapid transit plan is to provide a system that spans between Pearl City and Hawaii Kai. The initial phase of the system at the western end may terminate at Aloha Stadium or possibly at or near Middle Street depending on available funding.

The segment of the system to the east of the study area is proposed to be located on Dillingham Boulevard which is the route approved by the Kalihi-Palama Community. Thus the two basic route alternatives are: the airport route via Aolele Street and H-1 Freeway to the stadium and the Salt Lake route through Mapunapuna Industrial Tract and following Salt Lake Boulevard to the stadium. (See Figure I).

Based on a detailed study of the area, taking into consideration various service, social, economic, and environmental factors, it was found that Salt Lake Boulevard would offer the best opportunity for locating the fixed guideway facility. Salt Lake Boulevard is centrally located and it is presently and will continue to be the principal east-west street serving the area. It serves as the collector street for the north-south local streets and it ties into Kam Highway and Halawa Heights Road to the west and Puuloa Road to the east. It is currently being improved and will have a 100 ft. wide right-of-way.

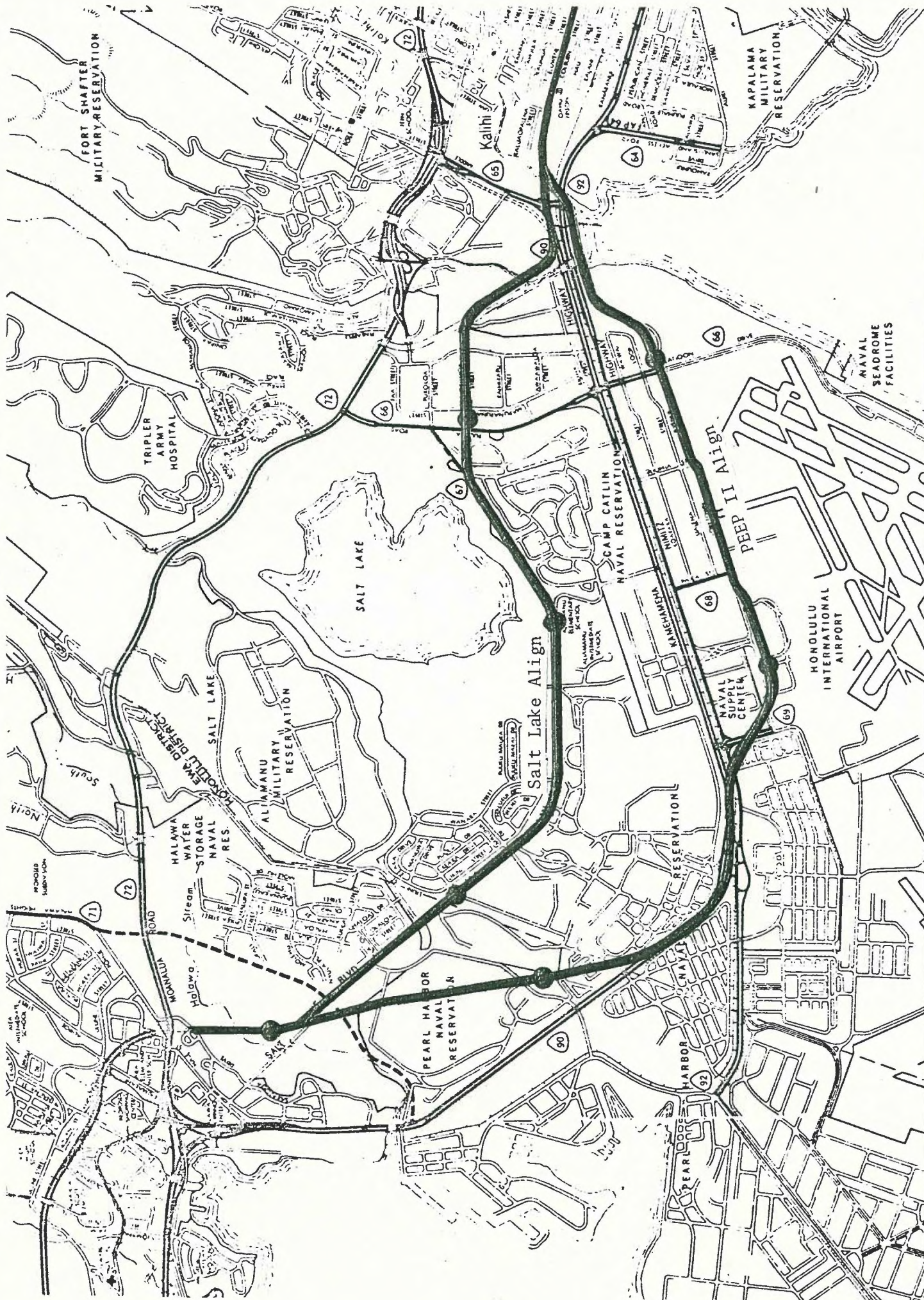


FIGURE I

As a major arterial, Salt Lake Boulevard will be carrying larger traffic volumes than other streets and consequently would have a relatively higher ambient noise level. Therefore it can accommodate the transit facility with less noise impact to the adjacent properties. The discontinuity of other streets would require acquisition of private lands to accommodate the transit facility resulting in a large number of dislocations of residents. All of these factors will also contribute to greater cost in ROW acquisition and relocation assistance.

Using Salt Lake Boulevard, this route alignment would be as follows. From Dillingham Boulevard, the line would extend westerly to the Moanalua Drainage Canal, then proceed northerly on the eastern side of the canal, cross the canal at Mokumoa Street, cross Puuloa Road, extend underground through the north-easterly tip of the military housing area, and then enter the proposed Salt Lake Boulevard extension. The transit line would follow Salt Lake Boulevard to the H-1 Freeway and enter the freeway median at the proposed Aloha Stadium station. (See Figure I).

Three stations would be provided with the first station located on Mokumoa Street at Puuloa Road to serve the Mapunapuna Industrial Tract. The second station would be located on Salt Lake Boulevard at Ala Likini Street and the third station at Pakini Street. Appropriate feeder bus service would be provided to serve surrounding areas which are beyond reasonable walking distance to the station.

D. EVALUATION OF SERVICE & PATRONAGE

As was previously stated, the basic difference between the two alternative routes is that one serves major employment and activity centers while the other serves an area that is primarily residential. An analysis of potential ridership capture was made by identifying trip productions and attractions and applying appropriate mode split percentages. It was found that the airport route would attract slightly more passengers than the Salt Lake route. The comparative ridership volumes were 23,200 daily passengers to various destinations along the airport route as compared to 21,800 daily passengers originating from the Salt Lake, Foster Village, and Mapunapuna area with the Salt Lake route. With the airport route, it was estimated that some 15,000 passenger trips from Salt Lake area would be attracted. Thus nearly 7,000 more daily passengers from the Salt Lake area could potentially be attracted with the transit line located on Salt Lake Boulevard. It is more difficult to estimate how many passengers destined for various employment and activity centers would be lost with the transit route located on Salt Lake Boulevard. Based on the generally accepted fact that it is more important to directly serve destination ends of trips than the origin ends, it stands to reason that possibly a substantial decrease in ridership would result if the transit line were on Salt Lake Boulevard. Therefore, it is concluded that ridership volumes would be higher with the transit line on the airport route.

E. COMPARATIVE COST ESTIMATE

The Salt Lake route is approximately 4.5 miles in length and the airport route approximately 5 miles but they both have the same number of stations. Other key features of the alternative routes are that the Salt Lake route has approximately 1500 feet of underground section and the airport route has approximately 7,000 feet of at-grade section. Both routes require about the same amount of ROW acquisition.

Each alternative route is estimated to cost approximately \$80 million in 1977 dollars. For purposes of this comparative evaluation, costs can be assumed to be equal with no cost advantage to either alternative.

F. SUMMARY OF COMPARATIVE EVALUATION

This segment of the proposed rapid transit system begins at Halawa (Aloha Stadium) and ends at the westerly end of Dillingham Boulevard. The basic difference in the two alternative routes is that the Salt Lake route serves more residential or the origin ends of trips. It is therefore a matter of determining which route would provide better transit service to benefit the region.

The proposed rapid transit system supported by an island-wide network of feeder buses is in effect an integrated system to provide improved transit service to the entire island. Accordingly, in the planning of the system, greater emphasis would be placed in conveniently serving major employment and activity centers with the fixed guideway system in urban Honolulu. In areas such as this where a large residential development exists in one location and important major employment and activity centers existing in a different location, the selection of the preferred route should be the route that provides the greatest benefit to the region with the least amount of adverse impacts. The key factors considered in this comparative evaluation are summarized in a matrix form as follows.

COMPARATIVE EVALUATION

	PEEP II ALIGN.	SALT LAKE ALIGN.
SERVICE QUALITY		
Trip production	15,000	22,000
Trip attraction	23,000	10,000
Total Trips	38,000	32,000
DISLOCATION		
Residential Units	-0-	21
Business	-0-	4
NOISE SENSITIVE AREAS		
Residential	-0-	12,000 LF
Schools	Minor Impact	Major Impact
VISUAL IMPACT		
Visibility (aerial)	19,000 LF	20,500 LF
Sensitive Area (Residential)	-0-	12,000 LF
Cost	Same	Same

Relative to transit service quality, the Salt Lake alternative provides superior service to residents of the area while the PEEP II alternative provides superior service to employment and activity centers located in the area. In terms of total transit trips, the PEEP II alternative will produce and attract more total trips and therefore would provide greater transportation benefits to the region.

Both alternatives use public lands extensively and requires minimum private land acquisition. The PEEP II alternative does not result in any dislocation of residents or businesses while the Salt Lake alternative would dislocate 21 residential units and 4 businesses.

In terms of noise impact, the PEEP II alternative traverses areas in industrial use or located within the existing freeway right-of-way where the impact of noise is minimal. The Salt Lake alternative traverses an industrial area as well as over 2 miles of noise sensitive residential area. In the current Salt Lake Boulevard widening project, some 10,000 lineal feet of 4 ft. to 8 ft. high concrete sound barrier walls are planned to be constructed to minimize the noise impact from vehicular traffic.^{4/} The location of the fixed guideway facility

in Salt Lake Boulevard will further add to increase vehicular traffic noise level in this noise sensitive residential area.

Fixed guideway facility in an aerial configuration is bound to create a visual impact on communities through which it traverses. Visual impacts can be assessed in relation to visibility of neighborhoods through which it passes. Generally sensitivity was determined to be the highest in residential areas through which the guideway system would pass in aerial configuration. The Salt Lake Alternative would have approximately 20,500 feet in aerial configuration as compared to 19,000 feet from the PEEP II alternative. However, over half of this length for the Salt Lake alternative would be through a highly sensitive residential area while the PEEP II alternative would have hardly any portion of the line in a noise sensitive residential area.

With the cost of the alternatives estimated to be about the same it is concluded that the PEEP II alternative would result in greater regional benefits by virtue of having higher transit usage and less social and environmental impacts on the community.

REFERENCES

1. Goals & Objectives - Interim Report, October 1971
2. Airport-Waikiki Transfer Study
Interim Report, March 1972
3. Study of Fixed Guideway Operational Concept
Technical Report, July 1974
4. Final Environmental Impact Statement,
Salt Lake Boulevard - Puuloa Road to Halawa Heights Road -
Extension Project, City & County of Honolulu,
February 1977



DANIEL, MANN, JOHNSON, & MENDENHALL • Los Angeles, California • San Francisco, California • Portland, Oregon • Washington, D.C. • Honolulu, Hawaii • Las Vegas, Nevada

PLANNING

ARCHITECTURE

ENGINEERING

SYSTEMS

ECONOMICS